

VOLUME 4, NUMBER 1, JUNE 2014 ISSN 2231-8836

JOURNAL OF INFORMATION & KNOWLEDGE MANAGEMENT



UNIVERSITI
TEKNOLOGI
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JOURNAL OF INFORMATION AND KNOWLEDGE MANAGEMENT
Volume 4, Number 1, June 2014
ISSN 2231-8836 (E-ISSN 2289-5337)

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The objectives of the *Journal of Information and Knowledge Management* are:

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- to assist academicians from local and foreign universities, business and industrial sectors, government departments and academic institutions, on publishing research results and studies in the areas of information management, records and archives management, library management and knowledge management through scholarly publications.

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Suggested Cataloguing-in-Publication Data

Journal of Information and Knowledge Management

Vol.4, no. 1, (2014) -

Shah Alam : Faculty of Information Management

ISSN 2231-8836

1. Library Science – Periodicals 2. Library Science Malaysia – Periodicals I. Z671

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AN EXPLORATIVE INVESTIGATION ON THE SUSTAINABILITY OF KNOWLEDGE REPOSITORY ESTABLISHMENT: THE CASE OF MALAYSIAN PUBLIC SECTOR

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Abstract: *Knowledge is an important resource in this current economic condition where organizations are competing in creating more innovation in order to sustain their business capabilities in the market. Therefore, it is crucial for an organization to preserve their knowledge as knowledge is a source of competitive advantage in this current era. An organization needs to plan and design the most appropriate approach to enable knowledge to be captured, stored and fully utilized. This study will focus on the sustainability of Knowledge Repository establishment in sharing the technical knowledge of the key personnel from the Malaysian public sector. The objective of this paper is to propose a research framework of an explorative investigation of the sustainability elements of an institutional repository establishment in the Malaysian public sector. The study will explore the dynamics of the repository that are used by the technical personnel in capitalizing the organizational technical knowledge by contributing, retaining and applying the knowledge asset. The research framework which governs the scope of study will explore the elements that may have significant influences towards the sustainability of the institutional repository.*

Keywords: *Knowledge, Knowledge Repository, Sustainability, Malaysian Public Sector*

INTRODUCTION

KM initiatives in Malaysia public sector currently lead by the Malaysian Administrative Modernisation and Management Planning Unit (MAMPU). As a government agency under the Prime Minister's Department, MAMPU is responsible in helping public sectors in terms of providing consultation services as well as helping the government agencies and ministries to come out with their Knowledge Management (KM) strategic plan. Although the development of KM initiative in Malaysian public sector is quite slow, MAMPU is committed in ensuring that the implementation can be completed stage by stage by 2015. The KM initiative led by MAMPU is linked to the Government Transformation Plan (GTP), whereby KM is placed under the Economic Transformation Program (ETP). The objectives of having KM in the Malaysian public sector are as follows:

- to manage knowledge in the public sector systematically;
- to create a learning organization;
- to establish an organized knowledge repository shared by everyone and usable by all;
- to establish a life cycle of knowledge production, integration and validation (create, share and innovates);
- to create an ongoing and adaptive interaction with the knowledge base;
- to allow for organized and proactive transfer of skills, know-how and expertise;
- to institute support through integrative technological means (e.g. Knowledge management systems); and
- to institute better governance for promoting knowledge sharing and creation for the benefit of the whole public sector. (MAMPU's KM Blueprint, 2011)

Apart from the objectives stated above, KM implementation in the Malaysian public sector aims to equip the public sector to be an innovative government aligned with the GTP's agenda. On the other hand as published by Performance Management and Delivery Unit (PEMANDU), (2010), through the roadmap of ETP, stated that towards vision 2020 the government will be the driven force, responsible in the transition towards a knowledge-based economy. One of the agendas is to enhance more knowledge workers in various industries as well as to upgrade all government's workforce and services aligned with the rapid changes of technology. With this effort, KM will be the important approach in managing the entire Master Plan of ETP.

Knowledge management (KM) is a common concept in management theory. It has been practiced in many fields such as business, human resource management, engineering, medicine and science. However, in the context of Malaysia, especially in

still at the development stage. Furthermore, only a few studies based on a holistic view on the readiness of the organization to adopt KM were conducted. Therefore, more empirical studies need to be done in Malaysia to fill the research gaps (Muhammad Najib and Juanil, 2011; Chong, Chong and Wong, 2009 and Salina and Wan Fadilah, 2008). The objective of this paper is to highlight the proposed research framework of an explorative investigation of the sustainability elements of an institutional repository establishment in the Malaysian public sector. The study will explore the dynamics of the repository that are used by the technical personnel in capitalizing the organizational technical knowledge by contributing, retaining and applying the knowledge asset.

LITERATURE REVIEW

Knowledge As Valuable Assets

Previous studies indicated that knowledge is regarded as an important asset for both individual as well as organization. Knowledge has become a very powerful tool as it being seen as the driving force in the current economic condition. Furthermore, knowledge is also considered as the essential source of competitive advantage for any organization to move forward in the very challenging market competition, and for that reason, many firms, including small business, have also considered that knowledge becomes one of the most important antecedents for a firm's competitiveness as well as the key driver for the continuous productive enterprise (Mahdi, Almsafir and Yao, 2011; Mahesh and Suresh, 2009; Abeson and Taku, 2009; Jakubik, 2007). In the context of an organization, knowledge has important linkage towards a proper decision making, processes or even action. Knowledge is a source of competitive advantage, Wu and Wang (2006), stated that competitive advantage is garnered through possession of unique knowledge and organization's ability to leverage it to their advantage. Davenport and Prusak (1998) further explained that better knowledge can lead in terms of making a wise decision about the strategy, competitors, customers, distribution channels and products and service life cycles. People who have a broader knowledge see things in a more complex and wider perspectives. This ability is one of the most important intellectual capital that need to be developed in the organization. Smith (2001) highlighted that, valuable human and knowledge resources will be wasted unless management openly accepts and support efforts to gather, sort, transform, record and transform knowledge. Husyman and De Wit (2002) discussed that a company's most important asset is its intellectual capital. In managing this intellectual capital, knowledge management is seen as the suitable approach to be practiced in an organization. The knowledge management approach focuses on how the work is carried out with continuous attention for uses developing

knowledge so that the organization can function effectively (Husyman and De Wit, 2002).

Knowledge can be divided into two, namely tacit and explicit knowledge. According to Cong and Pandya (2003), explicit knowledge can be defined as a knowledge that can be captured and written down in documents or database, whereby tacit knowledge is the knowledge that people have in their mind which is more of an 'unspoken understanding'. Technical tacit knowledge refers to people who master a specific body of knowledge or even has certain skills and ability that probably other people do not have and this kind of knowledge is very difficult to transfer and usually contains the source of competitive advantage for the organization (Hung, Lien and McLean, 2009; Child and Shumate, 2007 and Smith, 2001). Previous studies show that, as knowledge come in both explicit and tacit forms, it is important to study on the interaction and communication of both explicit and tacit knowledge as this will have a certain impact on the organization's competitive advantage. Furthermore, in order to enable the organization to survive in a long run, both explicit and tacit knowledge need to be captured and stored and continually used by the employees to enhance the creation of more competitive knowledge (Chen and Xu, 2010; Wusheng and Mikyung, 2011; Halonen and Laukkanen, 2008). The tacit knowledge of an individual will only be relevant when it can be effectively captured for the benefit of the organization. However, it is also important to capture the tacit knowledge of a group of people, as a group of people will enhance more innovative creation of tacit knowledge for the benefits of the organization (Erden, Krogh and Nonaka, 2008 and Bhardwaj and Monin, 2006).

Knowledge Management Practices

Knowledge management (KM) is seen as an initiative in utilizing the pool of knowledge to enhance organizational competitive advantage. Bhatt (2001) stated that in recent years, KM has become one of the most important subjects of discussion in business literatures. Both business and academic communities believed that, somehow by leveraging the knowledge, an organization can sustain its long-term competitive advantages. This was also being discussed by Chong, Chong and Wong (2009), who stated in their study that in today's economic condition, the competitive advantages of an organization does not rely on the market position but more towards having the difficulties in replicating knowledge assets and the manner in which they are deployed.

In the case of the Malaysian Public Sector, the government realizes among the strategies for Malaysia to move forward in achieving its vision 2020, is to transform to a knowledge-based economy. A knowledge based economy regards intellectual

approach that will help the organization to leverage its intellectual capital to enable them to be more competitive in the market place. On the other part, in order to provide a more efficient service for the citizens, the Malaysian government believes that having KM in the public sector agency will enhance and drive the public sector to be a more competitive government in Malaysia as well as in the world. In order for the government to implement KM which currently in the early stage, it is therefore important for them to choose the best KM practices or initiatives that will drive their business operations aligning with their core objectives. Bishop, Bouchlaghem, Glass and Matsumo (2008), discussed that KM initiative can be described as the organization's approach in managing its knowledge that will include both human (soft) and systems (hard) components. Kim and Nelson (2010), in their study on implementing the KM initiatives upon enhancing network access control revealed that, a suitable KM initiative will brought a change in employee's action which later shows that it will not only affect their own department, but it will created a good kind of stronger network access control which in turn affected the overall information security in the respective organization in a positive way. On the other part, as stated by Badruddin and Mohd Noor (2009), which in their studied they indicated that KM initiatives consist of three core parts which is the creation, dissemination and application. It will start once the organization have already determined their organization's objectives hence the existing knowledge is assessed, from there the relevant knowledge strategy will be created.

Sustainability Strategies

According to Swanson and Zhang (2012), sustainability perception may differ from one organization to another. Some see it as how to sustain their business strategies, product development, innovation, or even in terms of environmental issues. Others perhaps see sustainability towards the process of identifying, capturing, transferring of its knowledge assets for the purpose of competitive advantage. Whatever people see on sustainability matters in their current situation and environment. As such, it is understandable that sustainability is the most crucial strategy that need to be focused on to in the current global business market. Regardless whether it is a private sector or even a public sector, to be able to sustain in the global environment is the main focus.

Today, the emergence of technology infrastructures, the development of various information systems enabling the organization to work more efficiently in placing their competitive advantage in the marketplace. Therefore, it is more desirable in ensuring that the activities pertaining to the usage of this tool is sustained. Melville and Ross (2011), in their study examine a few factors contributing to the sustainability of the information system. It stated that the sustainability of an information system

depends upon the people and organization behavior. Mohd Safar and Ali (2009) stated in their study that, with regards on the enhancement of innovation, sustainable usage of an innovation is very crucial as innovations are meant to stay and on the other way it help in terms of development of a particular organization, community or even people. Therefore as point-out by Mohd Safar and Ali (2009), similarly as what's been discussed by Reagan and Yang (2012), there is a need in determining the factors that have the most significant contributions towards sustainability of any strategies.

Although that sustainability of any initiative will enable organizations to survive in a long run in any global market condition, managing it is something that is critical to look into. This can be seen through the study conducted by Petrini and Pozzebon (2009) upon managing the sustainability of business intelligence, whereby they stated that despite the concept or sustainability approach is something that is needed by any organization, to integrate the sustainability into the business operation and management of an organization will face a lot of obstacles. Several research frameworks were found which integrate KM initiatives and sustainability. Wu and Haasis (2011) developed a sustainability balance scorecard model (SBSC) whereby knowledge assets act as the basis in applying the model which involve few factors consists of perspective on processes, stakeholders, learning and sustainability. The integration between the KM processes and the model is important as this allows the organization to translate the sustainability strategies and vision into actions.

Another research framework developed by Nejati, Amirul and Azlan (2010), on the other hand explained that, KM process consists of knowledge identification, knowledge creation/development, knowledge acquisition/updating, knowledge sharing/dissemination and knowledge utilization contribute to the sustainable development of a KM system. On the other part, KM drivers as well as KM planning should also play the same role towards sustainability. In order to achieve a successful implementation of a KM system, a proper planning towards its sustainability is crucial. It is also important for the organization to identify what are the enablers that will drive the sustainability of the KM system. However, as discussed by Nejati, Amirul and Azlan (2010), having a good system and KM process in an organization does not guarantee in terms of sustaining organization performance. It is therefore crucial for the KM practices be continuously monitored and evaluate for the purpose of sustainability. Furthermore, Nejati, Amirul and Azlan (2010), discussed that, organizations are aware on the important of preserving and leveraging the knowledge assets, therefore organization is willing to consider any strategy in order to gain as much as competitive advantage by utilizing it.

In the context of Malaysia public sector, the government is facing with a very high demand of public services as well as managing various government projects that need to be offered to the citizens. With the rising needs of the public services whereby the citizens are seeking for an efficient deliverable from the government, it is important for the public sector to have a good system to enable the process of service transactions with the public are delivered in a good way. This is where Knowledge Repository (KR) is seen as the appropriate approach, to enable the smooth process of the public service transactions as well as government project execution. KR enables all technical reports, procedures, manuals and other forms of knowledge documents, including the survey forms distributed to the citizens for the purpose of getting feedback on the current services offered by the government to be stored in one place and act as a one stop center for the employees including those from other branches as well to refer to. Wu and Wang (2006) point-out that KR is established in order to support as well as enhance the organizational process of knowledge creation, storage and retrieval, transfer, sharing and application. Furthermore, Wu and Wang (2006) also explained that KR is seen as a form of integrated, user-machine system which provide information or knowledge for the purpose of supporting the operations, management, analysis and decision making in the organization. Similarly, Davenport and Prusak (2000), also discussed that many organizations are creating repositories for the purpose of internally source structured knowledge.

Previous study also indicated that, the establishment of any KMS such as KR, will enable organizations to manage and make use of their own knowledge in a more convenient way. It helps the employees to organize their work much better, as KR enables them to retrieve any knowledge that is usable for their task at a very minimal time. On the other hand, KR has also acted as a platform for the employees to collaborate and shared which allowing their own knowledge to be used and accessed by others (Velasquez, Sabherwal and Durcikova, 2011; McKelvie, Dotsika and Patrick, 2007; Franco and Mariano, 2007; Bock, Sabherwal and Qian, 2008). Considering the evidence in the previous studies on the KR, therefore it is important for the public sector to acknowledge the importance of this knowledge documents as it contain all kinds of tacit knowledge as well as explicit knowledge, including the technical tacit knowledge which embedded in various technical reports, project reports, procedures as well as a technical manual.

Akhavan, Jafari and Fathian (2006) develop a framework highlighted the factors, contributing to a successful KM system. It includes the KM process as consisting of knowledge identification, knowledge storage, knowledge sharing and knowledge

strategy, as well as other factors such as re-engineering, organizational structure, training programs, transparency, culture, CEO support as well as trust elements as the factors that will enhance the establishment and sustainability of a KM system. These elements were identified through the real findings from case studies by monitoring and observing 6 different companies which already have their own successful KM systems in place. Therefore, the elements discussed in the framework, can be used by other organizations as a guide to establish a KM system. A part of that, Aggestam and Perrson (2010), also mentioned that the nature of KR which requires the activity of capturing, packaging and storing, updating, disseminating the relevant knowledge for the utilization of the employees will later contribute in a continuous process of knowledge creation that enhance sustainability.

The Development of Conceptual Framework

This paper proposed a conceptual model which was derived from the discussion and reviews of various literatures on previous study and by comparing a few models of sustainability and KM system therefore the conceptual framework of the study was constructed by adapting the research framework developed by Nejati, Amirul and Azlan (2010) and shown in figure 1 below.

a) KM Cycle

In order to promote the usage of KR, it is important for people, whereby in the context of this study are the engineers to know how the flow of the technical knowledge to the repository. According to Mohd Hasan, Rusli and Paul (2006), KM are about managing the corporate knowledge and therefore it is important for the organization to know on KM cycle or activities as this will enhance the organization performance. As the government agency chosen to deal with various technical jobs and technical project execution at the state and national level, it is therefore important to identify, updating, sharing, utilize and create knowledge for future improvement. The continuous enhancement of this KM cycle will enable the agency to capture and store the valuable technical knowledge to be referred by other engineers from other states as well.

b) Knowledge Protection

Technical knowledge as discussed in the literature is in a form of tacit and explicit knowledge, and it is important for the engineers to be aware of the protection of their technical knowledge. According to Branin (2003), the current digital information environment, enables people to copy, reuse and repurpose any knowledge document in the repository, which raises the issue of intellectual

property rights. Furthermore, as stated by Laukkanen (2011), knowledge and innovations also need to be protected against imitation to ensure that the benefits which gain from the knowledge and innovation does not spill over to rivals.

c) KM Drivers

In any KM initiatives, it is important to have a KM drivers, as this driver will enable any initiative practiced in the organization to be successful. In terms of determining what kind of KM drivers that enhance KM initiatives in the organization, the organization itself must be aware which strongest point that will drive towards sustainability of KM initiatives. Wu, Wu, Li and Huang (2011), defined KM drivers as a helpful essential factor and condition for the organization, namely what conditions an organization should have and what factor it should pay attention to in order to implement knowledge management successful. Furthermore, as discussed by Migdadi (2009), organization needs to be more aware of the factors that contribute the most towards the success of a KM initiative. If they fail to understand and ignore the necessary important factors, it will likely hinder an organization's effort to realize the full benefits as well as it is hard for a KM initiative to sustain.

d) KM Planning

In sustaining any of KM initiative, it is important for the organization to have a proper planning to enable the KM initiatives to be widely practiced by all employees. According to Greiner, Bohmann and Krcmar (2007), different KM strategies as well as practices were proposed to be adequate for different types of knowledge. With regards to that, the selection of a suitable strategy and a proper planning, not only depends on the type of knowledge to be shared but also on the organizational environment the organization operates in. It can be understood that, in order for an organization to choose the most appropriate KM initiatives in their environment, a proper planning towards achieving it is essential. Apart from that as discussed by Migdadi (2009), in any planning towards KM implementation of organization, it is essential to create the understanding of the organization's knowledge resource as this will lead into shaping a knowledge agenda for the purpose of achieving sustainable results which later aligned with the business strategy. As stated by Cong and Pandya (2003), strategies and plans for implementing KM must be carefully thought-out in advance in order to succeed in the attempt and effort.

e) *KM Objectives*

In any KM project, KM objectives will guide the development process of the project. According to Aggestam and Person (2010), if knowledge is to be incorporated in the repository then it must be in line with the objective and purpose of having the KR. In other words, relating to the KM objectives, in order to ensure the sustainability of KR establishment, therefore it is crucial to know the objective of KM implementation in the organization. In this way, the development of any KM initiative will align with the core KM objectives of the organization. In the context of KM, Davenport, De long and Beers (1998), identify four types of broad objectives for KM projects. The objectives among all consist of :

- a) Create knowledge repositories
- b) Improved knowledge access
- c) Enhance knowledge environment and
- d) Knowledge as an asset

Davenport, De Long and Beers (1998) further stated that some KM projects achieve all the objectives at once and most have only one primary objective.

f) *The Motivational Elements*

To enable the sustainability of KR, it is crucial to have certain push factors which act as the motivational elements . This motivational element will enable any KM initiative to be practiced by employees as well as sustain in a long run. It also will determine the success factor for the overall implementation of the KM programme. The most common motivational element include support from the top management. According to Migdadi (2009), KM practices must be actively and aggressively endorsed and practiced by the company's leaders as they will set the example for others in the company as well as have a direct impact on the organization's culture and on how the company approaches and deals with knowledge management. Apart from that incentives and other recognition programs also have an impact towards the sustainability of any KM practices. Govind and Suryarayanan (2009) once mentioned that incentives are perhaps the most common mechanism for promoting knowledge sharing and the biggest push for KMS efforts comes from the belief that a KM system contains useful knowledge objects that have the potential to deliver cost savings and other benefits to an organization. Another important motivational elements that should look at is in building the knowledge culture itself. Davenport and Prusak (2000) highlight that, a knowledge-friendly culture was clearly one of the most important

conditions leading to the success and sustainability of any KM initiatives. Davenport and Prusak (2000) also pointed out that building the knowledge culture is the hardest factor to build from scratch.

g) *The Constraints*

Although motivational elements act as a push factor towards the sustainability of any KM initiative, including the establishment of KR. However, it is crucial for the organization to be aware of any constraint that will be a set back in the implementation of any KM initiative. Among the common barrier or constraint that has been discussed in many literature is lack of trust in sharing and transferring of knowledge. This was clearly discussed by Rosmaini and Yap (2010), who stated that one of the reasons why KM in Malaysia is not that successful is due to the fact that most Malaysian are self-centered and are reluctant to teach their skills and expertise to others as they felt that they will lose their specialty advantage. On the other hand, the attitude of the people in the organizations itself is also one of the main constraints in term of achieving the sustainability of KR. The attitude of reluctance to share is difficult to handle.

Based on the discussion of the elements above, attaining the sustainability of KR, is a crucial element of the KM process. The continuous practices of the KM process will determine the success of the repository. If the KM process is not being enhanced at the employee level, the KR will be under-utilized. Other element, such as knowledge protection is also crucial as this element will create a trust environment whereby the engineers are willing to continuously contribute in sharing their technical knowledge to the repository. A proper planning towards the future of KR by knowing the drivers that will enhance the utilization of the KR is essential.

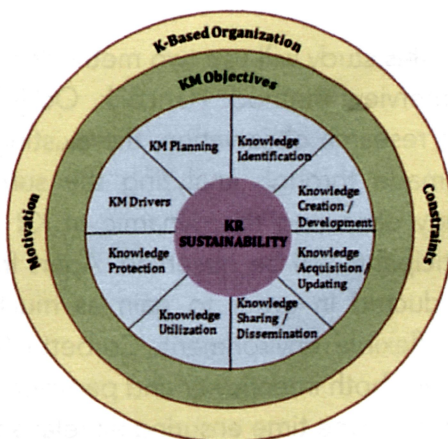


Figure 1 : *Conceptual Framework*

Among all, in realizing the sustainability of KR establishment it is also important to consider that the initiatives must be aligned with the KM objectives of the organization. As this will affect the business operation and strategies of the organization. The KM objectives will determine which initiatives that are suitable and should be applied by the organization. However, in any initiative that being promoted by an organization there will be constraints such as enforcement issues, trust issues or even dealing with the attitude of the people itself. Therefore, there is a need for the motivational elements to minimize the constraints and creating the awareness towards the importance of utilizing the KR.

RESEARCH DESIGN

This study will use a qualitative method due to the fact that the study aims at investigating the sustainability of KR in an in-depth manner which concerned with the social aspect of that particular organization. According to Hancock (2002), qualitative research is concerned with developing explanations of social phenomena. It aims at understanding the world in which we live and why things are the way they are. This study will also adopt a purposive sampling. In order to see the sustainability of KR in sharing the technical knowledge, the engineers will be the unit of analysis for this study. According to Marshall and Rossman (2011), decision about sampling people and events are made concurrently with decisions about the specific data collection methods to be used and determined in advance. With regards to the nature of qualitative research, purposive sampling is the most common method used by the qualitative researchers. This was also discussed by Marshall (1996), whereby purposive or judgment sampling is the most common sampling technique whereby the researcher will determine in selecting the most appropriate and productive sample to answer the research questions.

For the data collection, this study will use two methods that are observation method and semi structured interview method. Hancock, Ockleford and Windridge (2009) discussed that in some research observation, the existing of people is not required but observation was made through analyzing the surroundings or environment. Therefore, for this study observing the dynamic of KR in circulating the technical knowledge of the participants will be observed. Apart from that, a semi structured interviews will be conducted in order to gain as much as information from the participants in a more flexible environment. Corbetta (2003) discussed that semi-structured interviews gives both interviewer and participant freedom in exploring the subject matter while at the same time ensuring all relevant themes that had decided before are dealt and all necessary information collected. It also gives the opportunity for the interviewer to probe a question when is needed to get a more in-depth

elaboration from the participant. This study will adapt the thematic analysis applied by Rizk, Marx, Schrepfer, Zimmerman and Guenther (2009) for the purpose of analyzing the data. Whereby the data will be categorized into themes which have already determined before the data gathering process. As data categorized into the according themes then it will give the opportunity for the researcher to see the pattern of the data and allowing the interpretation process on the data more easier.

CONCLUSION

Knowledge is a source of competitive advantage. As for a public sector, managing their knowledge assets will lead to a better and efficient service delivery towards their citizens. In the case of Malaysian public sector although that KM is still at the beginning stage, however knowing which initiatives that can be aligned with their business operation is crucial. KR is one of the KM initiatives that enable the public sector to have a platform to manage, store and distribute its knowledge assets to be used by other employees in improving their task. KR is an initiative which helps the public agency to manage their workload in a more convenient way. However, the most crucial part of having the KM initiative in the public sector, is to know the way or elements that will help in sustaining the KR. This will result to a continuous usage of the initiative that later will improve the overall performance of the public sector. This study attempts to contribute a new empirical evidence on finding ways to sustain the KR by promoting continuous effort from the employees in contributing their knowledge to be shared and referred by others in providing a better service performance towards the citizens. On the other hand, it will also act as guidance for the KM teams in the respective agencies and ministries to improve their KM initiative as well as minimizing the barriers which set back the whole process of KM implementation in the public sector through utilizing the benefits of KR.

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